

## REMARKS

Claims 1-12 and 14-27 are pending. Claims 1, 10, and 22 are independent. Claim 13 was canceled without prejudice.

### *Claim Rejections – 35 U.S.C. §103*

The Patent Office rejected claims 1-2, 4 and 8-9 under 35 U.S.C. §103(a) as being unpatentable over Sawdy et al., U.S. Patent No. 6,351,831 (Sawdy) in view of Rauscher, U.S. Patent No. 6,874,100 (Rauscher) and further in view of Cruyningen, U.S. Publication 2002/0019897 (Cruyningen).

“To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.” (emphasis added) (MPEP § 2143). If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. (emphasis added) *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

As to Claim 1, the Patent Office cited to Sawdy as describing “a storage array network, comprising: a first and second storage array controller module (Fig 2: #210, 212), wherein each storage array controller module has a first and second array controller unit; and an array of storage devices (Fig 5: #70), wherein the first storage array controller module is a primary storage array controller that normally performs storage array controller functions and the second storage array controller module is a redundant back up (col. 1 lines 1-20). Sawdy does not disclose a first and second storage array controller module wherein each storage array controller module has a first and second array controller unit. Sawdy is directed to determining whether cabling is correctly connected and whether storage devices are identically referenced between two RAID

controllers. Sawdy discloses two RAID controllers, not two storage array controller modules. The two storage array controller modules in the present invention each contain two controller units. The RAID controllers in Sawdy are just composed of one RAID controller each. The RAID controllers in Sawdy are better likened to the storage array controller units of the present invention, not the storage array controller modules that contain two storage array controller units. Further, Sawdy does not state that one RAID controller is primary and the other is a redundant backup. Sawdy merely states that there are two RAID controllers for redundancy. Rauscher and Cruyningen do not cure Sawdy's defects. Additionally, Applicant is unclear what the Patent Office is citing to in Sawdy at Fig. 5 #70. Sawdy contains FIGS. 5A and 5B, neither of which contain a #70. Applicant respectfully requests the Patent Office clarify what in Sawdy is being cited.

The Patent Office correctly admitted that Sawdy does not describe the claimed aspect of a heartbeat signal between the storage array controller modules. The Patent Office then cited to Rauscher as describing "an active RAID system with multiple controllers in which the controllers are communicating with each other via heartbeat connections (col. 2 lines 56-68). The Patent Office stated it was obvious to include the heartbeat connect suggested by Rausner in Sawdy's system to inform each controller the status of the other controller and thereby allowing the other controller quickly take over the failed controller automatically. Raushcher fails to disclose a first storage array controller module which provides an availability signal to the second storage array controller module, and if the second storage array controller module does not receive a signal from the first storage array controller module within a given period of time, the second storage array controller module asserts control over the array of storage devices. The Patent Office cites column 2, lines 57-68 of Rauscher for support of its assertion. However, Raushcher fails to disclose a first storage array controller module which provides an availability signal to the second storage array controller module. Further, Rauscher fails to disclose if the second storage array controller module does not receive a signal from the first storage array controller module within a given period of time, the second storage array controller module asserts control over the array of storage devices. Rauscher merely mentions a heartbeat signal with no time limitation. Also, Rauscher

does not mention that the heartbeat signal is provided by one controller to the other and that it is an availability signal. The Patent Office stated that the heartbeat signal by definition is communicated periodically and that the time period is the period of the heartbeat signal and that failure to receive the heartbeat signal means the other redundant storage system is in failure. However, the Patent Office does not cite to a source for this asserted definition. As the Examiner is well aware, Applicant is required to seasonably challenge statements by the Examiner that are not supported on the record, and failure to do so will be construed as an admission by Applicant that the statement is true. M.P.E.P. §2144.03. Therefore, in accordance with Applicant's duty to seasonably challenge such unsupported statements, the Examiner is hereby requested to cite a reference supporting the position that heartbeat signal by definition is communicated periodically and that the time period is the period of the heartbeat signal and that failure to receive the heartbeat signal means the other redundant storage system is in failure. If the Examiner is unable to provide such a reference, and is relying on facts based on personal knowledge, Applicant hereby requests that such facts be set forth in an affidavit from the Examiner under 37 C.F.R. 1.104(d)(2). Absent substantiation by the Examiner, it is respectfully requested that the rejection under 35 U.S.C. § 103 be withdrawn.

Additionally, Rauscher further states problems associated with the heartbeat signal which would motivate others not to operate with a heartbeat signal. (Rauscher, Column 2, Lines 62-67). In response, the Patent Office cited to Rauscher col. 3 lines 1-16. However, col. 3 lines 1-16 do not cure the problems with a heartbeat signal. In col. 3 lines 1-16, Rauscher is concerned with double cabling to proof a RAID system against any single point of failure, not utilization of a heartbeat signal. Rauscher utilizes double cabling instead of a heartbeat signal because a heartbeat signal is a single point of failure. A heartbeat signal can cause a RAID system to fail if the heartbeat connection fails but both controllers are still operating. In col. 3 lines 1-16 Rauscher utilizes double cabling to protect against failure instead of a heartbeat signal. Therefore, because col. 3 lines 1-16 does not fix the disclosed problem with heartbeat signals, Rauscher does not motivate the utilization of heartbeat signals. Sawdy and Cruyningen fail to cure the defects of Rauscher.

The Patent Office next correctly admitted that Sawdy and Rausner do not disclose the claimed first and second array controller units. The Patent Office then cited to Cruyningen as describing “a storage array configuration (Fig 7) in which multiple disk units (Fig 7 disks in unit 20a and 20b) are grouped and controlled by the controller (Fig 7: #10). The Patent Office stated it was obvious to include the grouping of disks into units as suggested by Cruyningen in Sawdy’s system such that devices can easily be managed; for example an additional unit of storage being added into an existing storage channel partition (page 3 paragraph 42). Cruyningen does not disclose first and second array controller units within a storage array controller module. Regardless whether Cruyningen describes a storage array configuration in which multiple disk units are grouped and controlled by the controller, this is unrelated to first and second array controller units within a storage array controller module. In the present invention, each storage array controller module comprises two redundant array controller units. Cruyningen discloses the utilization of switches to partition I/O channels. Cruyningen discloses nothing concerning first and second array controller units within a storage array controller module. Sawdy and Rauscher fail to cure the defects of Cruyningen.

Further, there is no motivation to use the teachings of Sawdy, Rauscher, and Cruyningen in combination. All three do relate to storage systems, but all three relate to completely different areas of the storage system field. Sawdy relates to cabling verification in a storage system. Rauscher relates to protecting a storage system against having a single point of potential failure. Cruyningen relates to utilization of switches to partition I/O channels in a storage system. All three references solve totally different problems with totally different approaches. There is no motivation in Sawdy, Rauscher, and Cruyningen to combine the disparate disclosures to solve the problem addressed by the present invention. Obviousness cannot be established by combining the teaching of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. Under section 103, teachings of references can be combined only if there is some suggestion or incentive to do so. *ACS Hosp. Sys., Inc. v. Montefiore Hosp.*, 732 F.2d 1572, 221 USPQ 929 (Fed. Cir. 1984). Thus, the Examiner may not use

the patent application as a basis for the motivation to combine or modify the prior art to arrive at the claimed invention. The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. .... It is impermissible to use the claimed invention as an instruction manual or 'template' to piece together the teachings of the prior art so that the claimed invention is rendered obvious. This court has previously stated that "[o]ne cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention." *In re Oetiker*, 977 F.2d 1443, 24 USPQ 2d 1443 (Fed. Cir. 1992) *quoting In re Fine*, 837 F.2d 1071, 1075, 5 USPQ 2d 1596, 1600 (Fed. Cir. 1988).

The Dean statement is of the type that gives only general guidance and is not at all specific as to the particular form of the claimed invention and how to achieve it. Such a suggestion may make an approach "obvious to try" but it does not make the invention obvious. .... We recognize that given the teaching in appellant's specification regarding incorporation of the gene into the chromosome and utilizing the bacteria in the plant environment, one can theoretically explain the technological rationale for the claimed invention using selected teaching from the references. This approach, however, has been criticized by our reviewing court as hindsight reconstruction. *Ex parte Obukowicz* at 1065.

Since obviousness cannot be established by combining the teaching of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination, Claim 1 should be allowed.

For at least these reasons, Claim 1 is allowable. Claims 2, 4 and 8-9 depend from Claim 1, which is non-anticipatory and non-obvious based on the rationale above. Thus, Claims 2, 4 and 8-9 are allowable based on their dependence from Claim 1.

The Patent Office rejected claim 3 under 35 U.S.C. §103(a) as being unpatentable over Sawdy, Rauscher, and Cruyningen in further view of Brocade (Quick loop data sheet). Applicant respectfully traverses. Claim 3 depends from independent claim 1,

which is non-anticipatory and non-obvious based on the rationale above. Thus, dependent claim 3 (which depends from independent claim 1) should be allowed.

The Patent Office rejected claims 5-7 under 35 U.S.C. §103(a) as being unpatentable over Sawdy, Rauscher, Cruyningen, in further view of Deng, U.S. Patent 6,937,608 (Deng). Applicant respectfully traverses. Claims 5-7 depend from independent claim 1, which is non-anticipatory and non-obvious based on the rationale above. Thus, dependent claims 5-7 (which depend from independent claim 1) should be allowed.

The Patent Office rejected claims 10-12, 14-18, 20, and 22-27 under 35 U.S.C. §103(a) as being unpatentable over Sawdy, Rauscher, Cruyningen, in further in view of Workman et al., U.S. Publication 2004/0068591 (Workman), and Jantz, U.S. Patent No. 5,944,838 (Jantz).

Applicant respectfully submits claims 10-12 and 14-18, 20, and 22-27 are novel and nonobvious. The Patent Office has combined no less than five references to meet each limitation of claims 10 and 22 and has failed to provide any support for combining each of the five references. Rather, the Patent Office is impermissibly selecting features from five references in a combination set forth by the present application and stating the combination is obvious. Obviousness cannot be established by combining the teaching of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. Under section 103, teachings of references can be combined only if there is some suggestion or incentive to do so. *ACS Hosp. Sys., Inc. v. Montefiore Hosp.*, 732 F.2d 1572, 221 USPQ 929 (Fed. Cir. 1984). Thus, the Examiner may not use the patent application as a basis for the motivation to combine or modify the prior art to arrive at the claimed invention.

The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. .... It is impermissible to use the claimed invention as an

instruction manual or 'template' to piece together the teachings of the prior art so that the claimed invention is rendered obvious. This court has previously stated that "[o]ne cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention." *In re Oetiker*, 977 F.2d 1443, 24 USPQ 2d 1443 (Fed. Cir. 1992) *quoting In re Fine*, 837 F.2d 1071, 1075, 5 USPQ 2d 1596, 1600 (Fed. Cir. 1988).

The Dean statement is of the type that gives only general guidance and is not at all specific as to the particular form of the claimed invention and how to achieve it. Such a suggestion may make an approach "obvious to try" but it does not make the invention obvious. .... We recognize that given the teaching in appellant's specification regarding incorporation of the gene into the chromosome and utilizing the bacteria in the plant environment, one can theoretically explain the technological rationale for the claimed invention using selected teaching from the references. This approach, however, has been criticized by our reviewing court as hindsight reconstruction. *Ex parte Obukowicz* at 1065.

Since obviousness cannot be established by combining the teaching of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination, claims 10-12 and 14-18, 20, and 22-27 should be allowed.

As to Claim 10, the Patent Office stated the rejection was based on the same rationale as the rejection of Claim 1, which is non-anticipatory and non-obvious based on the rationale above. Claim 1 is allowable based on the rationale above and thusly, for the same reasons, Claim 10 is allowable.

The Patent Office then went on and correctly admitted that Sawdy, Rauscher, and Cruyningen do not describe the claimed handshaking protocol. The Patent Office went on to cite to Workman as describing "a handshake protocol on the heartbeat path between the first and second storage controllers to determine which of the first and second storage controllers to process the command (page 3 paragraphs 30-31, Fig 2). The Patent Office Stated it was obvious to include the heartbeat signals suggested by Workman in Sawdy's

system to monitor and determine if a switch over is required (page 3 paragraph 30 lines 16-23). Workman does not disclose a handshake protocol on the heartbeat path between the first and second storage controllers to determine which of the first and second storage controllers to process the command. In the cited section of Workman, the controllers monitor the heartbeat connection and act accordingly if the heartbeat connection is interrupted. A handshake protocol is a sequence of negotiations between two or more communicating devices, requiring mutual agreement. Workman does not discuss a handshake protocol at all. Both controllers monitor the heartbeat connection. They act based on the condition of the heartbeat connection. There is no negotiation and no mutual agreement by the controllers in Workman. Thus, Workman does not disclose a handshake protocol on the heartbeat path between the first and second storage controllers to determine which of the first and second storage controllers to process the command. Sawdy, Rauscher, Cruyningen, and Jantz fail to cure the defects of Workman.

The Patent Office then correctly admitted that Sawdy, Rauscher, Cruyningen, and Workman do not disclose the claimed command queue. The Patent Office went on to cite to Jantz as describing "separate queues containing pending commands for each I/O paths A, B. In the situation of a failure on the first I/O path A, the command is executed and removed from the alternated queue of path B (col. 7 lines 5-35). The Patent Office stated it was obvious to include the command queues suggested by Jantz in Sawdy's system so that the I/O pending requests can be rapidly identified and restarting all such identified I/O requests on the alternate good I/O path (col. 7 lines 28-35). Jantz does not disclose separate queues at all. In the cited sections, Jantz discloses a RDAC software layer that contains an I/O queue of pending I/O requests. I/O requests come from the application layer and are handled by the RDAC layer. The RDAC layer attempts to process the request on the first I/O path. If the first I/O path fails to process the request the RDAC layer attempts to process the I/O request on a second I/O path. Only when the I/O request is successfully processed is the I/O request removed from the I/O queue. However, the RDAC layer is a software layer separate from the control modules and there is only a single queue. The control modules do not contain queues. Jantz does not disclose separate queues. The queue is not contained in the control modules. Thus, Jantz does not

disclose the claimed command queue. Sawdy, Rauscher, Cruyningen, and Workman fail to cure the defects of Jantz.

For at least these reasons, Claim 10 is allowable. Claims 11-12, 14-18 and 20 depend from Claim 10, which is non-anticipatory and non-obvious based on the rationale above. Thus, Claims 11-12, 14-18 and 20 are allowable based on their dependence from Claim 10.

The Patent Office stated Claim 22 was rejected on the same rationale as Claim 10, which is non-anticipatory and non-obvious based on the rationale above. Claim 10 is allowable based on the rationale above and thusly, for the same reasons, Claim 22 is allowable. Claims 23-27 depend from Claim 22 and are, therefore, allowable based on their dependence from Claim 22.


The Patent Office rejected claims 19 and 21 under 35 U.S.C. §103(a) as being unpatentable over Sawdy, Rauscher, Cruyningen, Workman, Jantz, in further view of Ito et al., U.S. Publication 2003/0014600 (Ito). Applicant respectfully traverses. Claims 19 and 21 depend from independent claim 10, which is non-anticipatory and non-obvious based on the rationale above. Thus, dependent Claims 19 and 21 (which depend from independent claim 10) should be allowed.

CONCLUSION

In light of the forgoing, reconsideration and allowance of the claims is earnestly solicited.

Respectfully submitted,  
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